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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/730,463	12/05/2000	Werner Sievers	HOE97/F143	8152

7590

08/04/2003

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EXAMINER

WYROZEBSKI LEE, KATARZYNA I

ART UNIT

PAPER NUMBER

1714

DATE MAILED: 08/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/730,463

Applicant(s)

SIEVERS ET AL.

Examiner

Katarzyna Wyrozebski Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 May 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9, 12, 13, 15, 16 and 20-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 25-28 is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-9, 12, 13, 15, 16, 20, 21, 23, 24 and 29-31 is/are rejected.
- 7) ☒ Claim(s) 5, 6 and 22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All   b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other:  |

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claims 12, 13, 15, 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 12, 13, 15, 24 disclose article or process for making article, which is either molded article or surface coating. The limitation is indefinite, since it is not clear what type of the article the applicants claim. The molded article and coatings are very different, and require entire different processes to make them.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3, 4, 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Harmer (US 5,824,622).

The prior art of Harmer discloses composition for silica networks comprising silicon oxide source and fluorinated polymer. Formed network has pore size in a range on 0.5-75 nm (Abstract).

According to the example 1, which discloses making of gel by utilizing 40% of perfluorinated resin and 60% of tetramethoxy silane (col. 13-14). According to the example 1, two dispersions are formed. First dispersion comprises perfluorinated resin in 0.4M solution of NaOH. Second dispersion comprises tetramethoxy silane in 0.04M of HCl. The two dispersions are mixed and gel is formed within 15 seconds to 1 minutes. Next the gel is dried.

According to the specification of the prior art of Harmer, the composition is gelled by altering the pH (col. 5, lines 44-46). The specification also discloses use of other sources of silicon dioxide, which include sodium silicate (col. 5, line 47). Sodium silicate is utilized also in example 11 of the prior art of Harmer. The gel forming reaction can be carried out over wide range of acidity and basicity depending on the amount of base added (col. 6, lines 37-42).

The prior art of Harmer also teaches that the pore size can be further altered by addition of calcium carbonate, which are submicron size particles (col. 7, lines 17-19).

The product of the prior art of Harmer is a polymer, which interpenetrates the pores of the silica network (col. 7, lines 33-35).

In the light of the above disclosure, the prior art of Harmer anticipates requirements of claims rejected above.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 2, 12, 13, 15, 16, 20, 21, 23, 24, 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harmer (US 5,824,622) in view of Koloski (US 5,977,241)

The discussion of the disclosure of the prior art of Harmer from paragraph 4 of thus office action is incorporated here by reference.

The difference between the present invention and the disclosure of the prior art of Harmer is showing that the networks containing silicon dioxide can be utilized in articles such as coating, molded articles or thermal insulation with other polymers such as polyamides, polyacrylates or polyvinyl alcohol.

With respect to the above difference, the prior art of Koloski discloses another method of making organic/inorganic network.

The inorganic material of the prior art of Koloski can be itself a three dimensional network within polymer's free volume (col. 9, lines 19-24). In general disclosure, the prior art of Koloski teaches that the inorganic/organic network can be formed by adding hydrolyzable metal or hydrolyzed metal gels into the dissolved polymer, adding hydrolyzing agent or adjusting pH to effect hydrolysis and curing (col. 3, lines 11-17). The fact that one would have to remove the solvent and thereby dry the product is intrinsic. In addition the change in pH or hydrolysis will both result in gelation of the composition.

The polymers utilized in the composition of Koloski according to claims 30-32 include fluoropolymers, polyacrylates, polymethacrylates and polyvinyl alcohol among others.

The products that can utilize the interpenetrating networks of Koloski include materials used for thermal or shielding, wherein in shielding is generic to insulation, which will obviously

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require the composition to be molded into necessary shape. The second product that can be obtained is antistatic layer, which can be coated onto a substrate (Abstract).

The composite, which comprises network of both inorganic and organic components interpenetrating each other, can be utilized in articles such as heat shielding.

In the light of the above disclosure, it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize the polymers of Koloski in the composition of Harmer and thereby obtain the present invention. Utilizing polymers of Koloski will not affect network formation of the prior art of Harmer, since as the prior art of Koloski discloses these polymers are more than capable of forming network and gels with the metal oxides.

9. Claims 2, 4, 7, 9, 12, 13, 15, 20, 21, 23, 24, 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harmer (US 5,824,622) in view of Geiss (US 5,948,314).

The discussion of the disclosure of the prior art of Harmer from paragraph 4 of thus office action is incorporated here by reference.

The difference between the present invention and the disclosure of the prior art of Harmer is showing that the networks containing silicon dioxide can be utilized in articles such as aerogel prepared with silylating agent in molded thermal insulation, thin films or adhesives with other polymers and wherein resulting aerogel has density of less than  $0.6 \text{ g/cm}^3$ .

With respect to the above differences, the prior art of Geiss utilizes sol-gel technique to form aerogel, which is rendered hydrophobic by utilizing silyl groups (Col. 3, lines 65-67)

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The density of the aerogel is less than  $0.6 \text{ g/cm}^3$  (col. 3, lines 58-59) and the polymers utilized in the composition include melamine-formaldehyde polymers, acrylate dispersions, ethylene vinyl acetate and the like (col. 4, lines 40-42).

Other additives include opacifiers, such as carbon black, titanium dioxide, iron oxides, zirconium dioxides or mixture thereof (col. 3, lines 52-54).

Polymers used in gels formed by sol-gel chemistry as long as they are capable of forming a molded articles such as thermal insulation, thin film and adhesives.

In the light of the above disclosure, it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize the polymers of Geiss in the composition of Harmer and thereby obtain the present invention. Utilizing polymers of Geiss will not affect network formation of the prior art of Harmer, since as the prior art of Geiss discloses these polymers are more than capable of being used with porous aerogels.

#### *Allowable Subject Matter*

10. Claims 5, 6, 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. Claims 25-28 are allowed. The prior art of record does not disclose the process, which would utilize the composition in bio-field and a sensor and diagnostic material.



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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski-Lee whose telephone number is (703) 306-5875. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (703) 306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

*Katarzyna Wyrozebski*

KIWL

July 30, 2003